HybridSpectral Radiometer Systems to Support Ocean Color Cal/Val, Phase II

Completed Technology Project (2012 - 2014)

Project Introduction

NASA has an ongoing commitment to collect in situ data with a documented uncertainty in keeping with established performance metrics for vicarious calibration of ocean color satellite sensors. This proposal seeks funding to develop an in-water "Hybridspectral" capability that combines two differing practices for data collection (multiwaveband and hyperspectral) to satisfy the diversity, accuracy, and precision requirements of future ocean color missions. Called the Compact Hybridspectral Radiometer (C-HyR), C-HyR places special focus on two important priorities from the call: 1) Instruments making measurements of the apparent optical properties; and 2) Hyperspectral radiometers (340 - 900 nm) for use in near-surface profiling. The C-HyR system leverages a 2004 NASA SBIR microradiometer development that lead to the Compact-Optical Profiling System (C-OPS), a commercially available multiwaveband radiometer system and adds a spectrograph-based upwelling Radiance Collector Assembly (RCA) for operations very near the surface of the water at the top of a vertical profile. In Phase II, attention will be paid to spectrograph selection with the goal of making optically valid measurements out to 900 nm, as requested in the call. For improved deployment security and shadow avoidance, the system uses an innovative buoyancy backplane with twin positioning thrusters to ensure ship avoidance and allow maneuvering the profiler to a desired sampling location. The result is an innovative expansion of existing state-of-the-art commercial instruments to include a spectral sampling capability that exceeds current and planned satellite requirements, and that can operate in optically complex near-shore regions. The benefits of this new sampling capability are an improved ability to separate the biotic and abiotic components of seawater, an improved ocean color mission calibration and validation capability into Case 2 waters, reduced deployment effort, and reduced deployment risks.

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Biospherical Instruments, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Continued on following page.

Small Business Innovation Research/Small Business Tech Transfer

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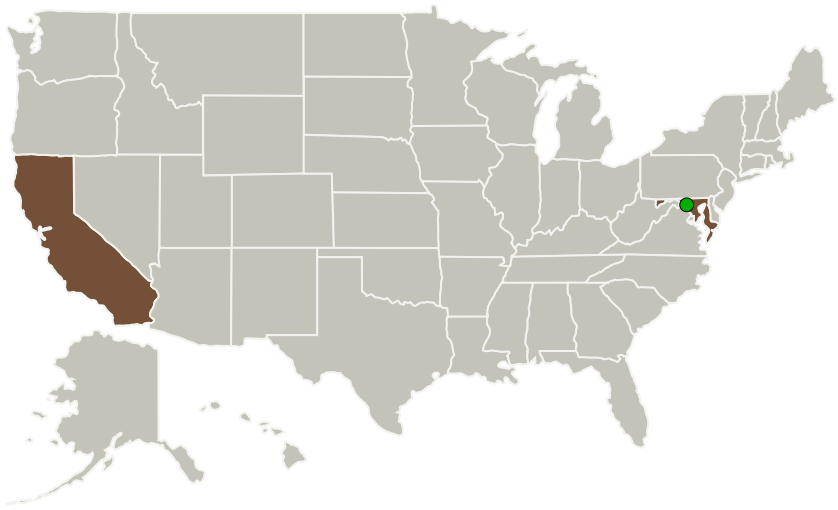
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Biospherical Instruments, Inc.	Lead Organization	Industry	San Diego, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
California	Maryland

Project Transitions

December 2012: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137318)*

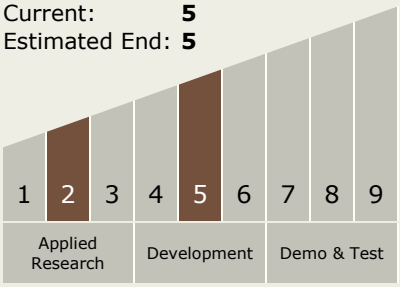
Project Management *(cont.)*

Principal Investigator:

Charles Booth

Technology Maturity (TRL)

Start: **2**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System

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Images

Project Image
HybridSpectral Radiometer Systems to Support Ocean Color Cal/Val
(https://techport.nasa.gov/image/129631)